Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Ag84L
cop. 3
411

LIBRARY
CURRENT SERIAL RECORD
★ OCT 21 1959 ★
U. S. DEPARTMENT OF AGRICULTURE

The CORN EARWORM

in sweet corn

HOW TO CONTROL IT

U. S. DEPARTMENT OF AGRICULTURE

LEAFLET NO. 411

The CORN EARWORM in S

HOW TO CONTROL IT

If you grow sweet corn, you probably have seen the corn earworm.[1] Early in the growing season, the small, round, white eggs glisten on the silks; later, the larvae (earworms) feed in the buds of young corn or in the husks, the silks, and the kernels of older corn. The adult is a moth.

Uncontrolled, the corn earworm is the most destructive insect of corn in the United States. It causes millions of dollars worth of damage every year; it sometimes damages sweet corn so severely that the crop is unmarketable.

You can control the corn earworm—and reduce crop losses—with DDT.

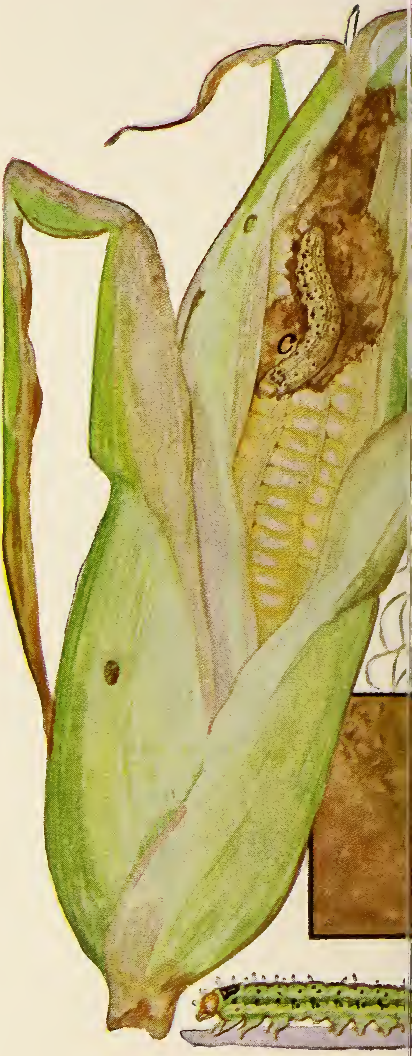
Control of the earworm has made possible the rapid development of sweet corn industries in Florida and in the Rio Grande Valley of Texas. Before effective control, commercial production of sweet corn in these States was impossible.

Although corn is the insect's preferred food, the earworm feeds on other crops. When it occurs on tomatoes, it is called the tomato fruitworm; and on cotton, the bollworm.

Damage

Only the larvae damage corn. (Adults do not feed on plant tissues.) Early in the season, they attack the buds or central shoots, feeding on the tender, unfolding leaves. This damage is commonly called budworm damage. When the tassels appear, the earworms feed on them, but this feeding rarely affects corn production.

The most serious damage occurs when the larvae attack the ears. At first, the larvae feed on the fresh silks, and may sever them.



a, Moth (or adult), and eggs on sil
corn; *d*, pupa in a cell; *e*, color phas
1⅓ times natural size; *b* 5½ times na

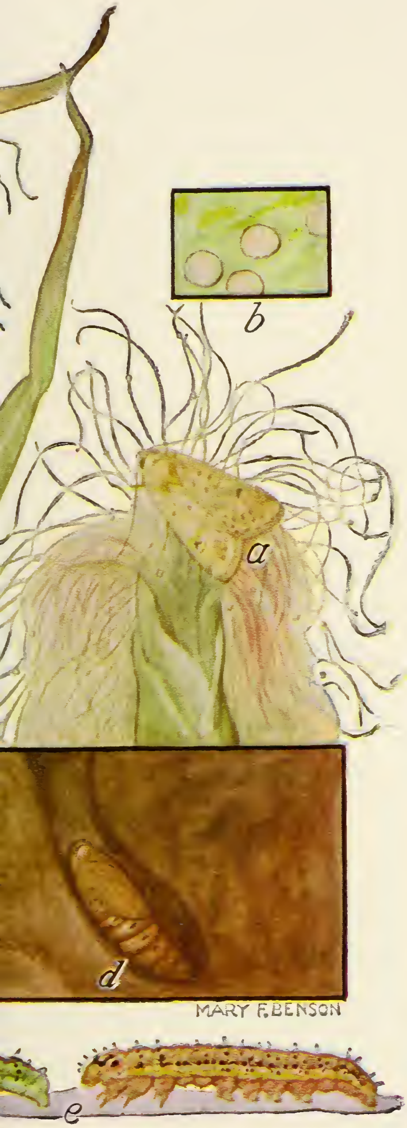
As the silks dry, the larvae shift to the kernels, especially those near the ear tip. They frequently penetrate to the middle of the ear.

Damaged sweet corn must be trimmed before it is marketed or

---

[1] *Heliothis zea.*

eet Corn



, eggs; c, earworm feeding in ear of
f the earworm. (All except *b* about
l size.)

processed at the cannery. The market price for trimmed corn is considerably lower than for untrimmed corn—and trimming increases the labor cost during processing.

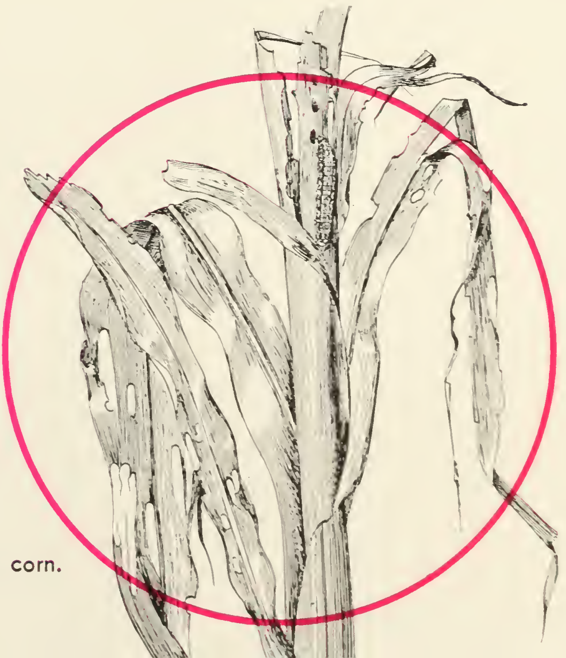
Development

The life cycle of the corn earworm is as follows: Egg, larva, pupa, and adult. In a very mild climate, such as that of southern Florida, parts of States bordering the Gulf of Mexico, and southern California, the insect completes this cycle in about a month and may produce up to 7 generations a year. In much of the Corn Belt, the insect has 3 or 4 generations a year. In the northernmost part of the country, it has only 1 generation.

The cycle begins when the female moths lay their eggs on the silks or on other parts of the corn plant. When the eggs are first laid, they are white. When they are ready to hatch into larvae, usually in 2 to 8 days, they are dusky brown.

The newly hatched larvae are whitish, and have black heads. Those that hatch on the leaves of young corn first feed in the central whorl of leaves, and then on the tassels and on the ears. Those that hatch on the silks feed on the silk mass inside the tips of the husks, and then on the ears.

The time required for larvae to reach full growth depends on temperature, and ranges from 13 to



Budworm damage to young corn.

The CORN EARWORM *in Sweet Corn*

HOW TO CONTROL IT

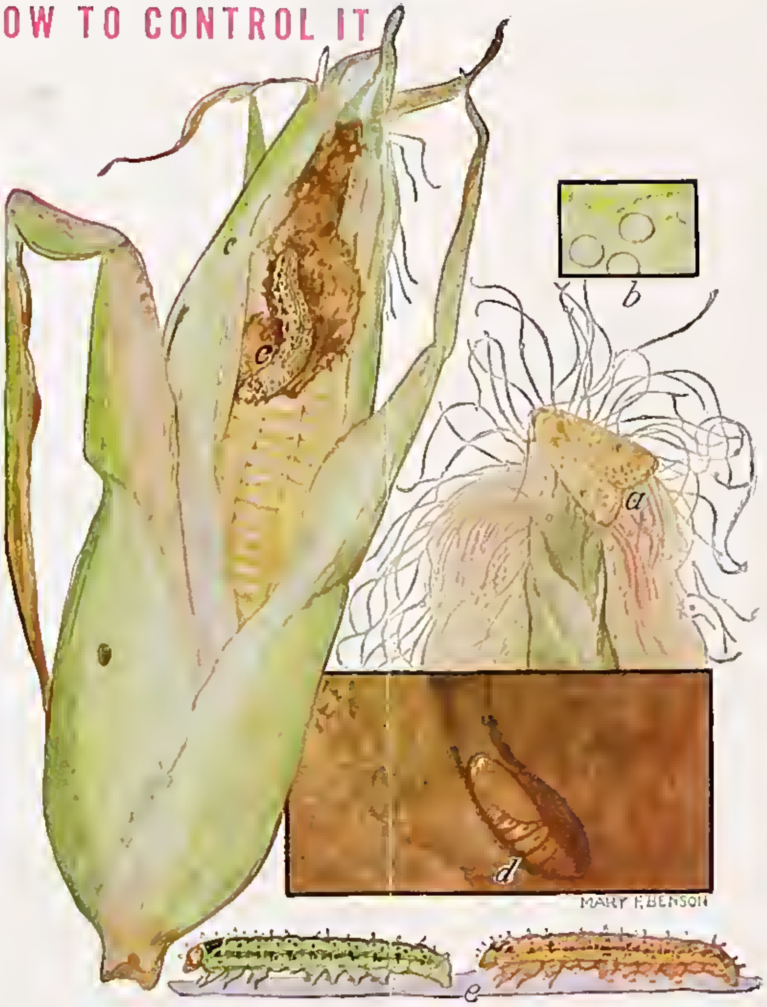
If you grow sweet corn, you probably have seen the corn earworm.[1] Early in the growing season, the small, round, white eggs glisten on the silks; later, the larvae (earworms) feed in the buds of young corn or in the husks, the silks, and the kernels of older corn. The adult is a moth.

Uncontrolled, the corn earworm is the most destructive insect of corn in the United States. It causes millions of dollars worth of damage every year; it sometimes damages sweet corn so severely that the crop is unmarketable.

You can control the corn earworm—and reduce crop losses—with DDT.

Control of the earworm has made possible the rapid development of sweet corn industries in Florida and in the Rio Grande Valley of Texas. Before effective control, commercial production of sweet corn in these States was impossible.

Although corn is the insect's preferred food, the earworm feeds on other crops. When it occurs on tomatoes, it is called the tomato fruitworm; and on cotton, the bollworm.



a, Moth (or adult), and eggs on silk; *b*, eggs; *c*, earworm feeding in ear of corn; *d*, pupa in a cell; *e*, color phases of the earworm. (All except *b* about 1⅓ times natural size; *b* 5½ times natural size.)

Damage

Only the larvae damage corn. (Adults do not feed on plant tissues.) Early in the season, they attack the buds or central shoots, feeding on the tender, unfolding leaves. This damage is commonly called budworm damage. When the tassels appear, the earworms feed on them, but this feeding rarely affects corn production.

The most serious damage occurs when the larvae attack the ears. At first, the larvae feed on the fresh silks, and may sever them. As the silks dry, the larvae shift to the kernels, especially those near the ear tip. They frequently penetrate to the middle of the ear.

Damaged sweet corn must be trimmed before it is marketed or processed at the cannery. The market price for trimmed corn is considerably lower than for untrimmed corn—and trimming increases the labor cost during processing.

Development

The life cycle of the corn earworm is as follows: Egg, larva, pupa, and adult. In a very mild climate, such as that of southern Florida, parts of States bordering the Gulf of Mexico, and southern California, the insect completes this cycle in about a month and may produce up to 7 generations a year. In much of the Corn Belt, the insect has 3 or 4 generations a year. In the northernmost part of the country, it has only 1 generation.

The cycle begins when the female moths lay their eggs on the silks or on other parts of the corn plant. When the eggs are first laid, they are white. When they are ready to hatch into larvae, usually in 2 to 8 days, they are dusky brown.

The newly hatched larvae are whitish, and have black heads. Those that hatch on the leaves of young corn first feed in the central whorl of leaves, and then on the tassels and on the ears. Those that hatch on the silks feed on the silk mass inside the tips of the husks, and then on the ears.

The time required for larvae to reach full growth depends on temperature, and ranges from 13 to

Budworm damage to young corn.

---

[1] *Heliothis zea.*

28 days. Full-grown larvae are up to 1½ inches long.

Full-grown larvae vary in color. Some have conspicuous cream, yellow, brown, slate, or black stripes. Others do not have stripes, and may be pink, green, cream, or yellow.

Their feeding done, larvae drop to the ground, burrow 1 to 9 inches into the soil, and construct cells in which to transform into pupae. The moths emerge in about 14 days. (The earworm usually passes the winter in the pupal stage.)

Moths live about 12 days, during which time they mate and the females lay eggs. A female may lay 400 to 3,000 eggs—the average is about 1,000.

Control

The corn earworm can be controlled most effectively with a DDT emulsion to which a light mineral oil is added. The type of equipment you use to apply the emulsion depends on the size of the crop to be treated.

Sprayers

Hand sprayers. In gardens, use any good hand sprayer to apply the emulsion to the corn silks. The usual garden-type spray guns, compressed-air sprayers, or knapsack sprayers are satisfactory.

Power sprayers. On commercial acreages, use a high-clearance, 4-nozzles-per-row sprayer that produces a fine spray. Adjust the nozzles so that the spray hits the silks of ears.

To reduce budworm damage by the earworm before plants tassel and silk, use any practical sprayer that will apply the spray from above to the upper leaves and to the ear shoots, if any are present.

For best results, spray sweet corn three times as follows: First, the day after the silks appear; second, 3 days later; third, 3 days later. Apply the insecticide to the silks; use enough of it to wet them thoroughly.

Directions for preparing 25 gallons of spray (sufficient for treating 1 acre of corn) and 1 gallon of spray (for a plot 17 by 100 feet) follow:

- Mix 1 gallon of 25-percent DDT emulsifiable concentrate and 1 gallon of light mineral oil with enough water to give you 25 gallons of the emulsion.
- Mix ⅓ pint of 25-percent DDT emulsifiable concentrate and ⅓ pint of light mineral oil with enough water to give you 1 gallon of the emulsion.

Additional Pointers:

(1) If you apply DDT to the whorls, use half the recommended amount of oil in the spray.

(2) Shake the emulsion well so that the oil will not separate.

(3) If you use an emulsifiable concentrate in which the DDT content is lower or higher than 25 percent, use proportionately more or less of it in preparing the spray.

Precautions

DDT is poisonous. Handle it with care. Follow the directions on the label and heed all precautions.

Do not feed husks or other parts of corn plants treated with DDT to dairy or meat animals.

Prepared by the Entomology Research Division, Agricultural Research Service. This publication supersedes Leaflet No. 284, "Protect Your Garden Corn From Earworms."

Washington, D. C. Issued May 1957

For sale by the Superintendent of Documents,
U. S. Government Printing Office,
Washington 25, D. C. — Price 10 cents

Treating sweet corn in silk with high-clearance, self-propelled sprayer.